

al., "A low reflectivity multilayer cathode for organic light-emitting diodes," *Thin Solid Films*, Vol. 379, pp. 195-198 (December 8, 2000). The Renault reference states for example:

"Our multilayer cathode consists of three layers (Fig. 1) sequentially deposited onto the organic films by thermal evaporation: (1) a thin, semi-transparent film of a low work-function metal such as magnesium (Mg) to ensure good charge injection properties; (2) a light-absorbing, electrically conductive C layer that reduces the reflectivity of the electrode; and (3) an aluminum (Al) metal layer that enhances the conductivity along the layer and acts as a moisture barrier." (page 195, second column, second paragraph to page 196, first column, first paragraph).

Although the Examiner has already indicated consideration of the Renault reference by placement of his initials next to the Renault reference on the Form PTO-1449, applicants respectfully request the Examiner to reconsider the Renault reference.

Support for amending claims 1 and 7 to recite a "single" substantially transparent charge/electron injecting layer is found for example in FIG. 1 and the text discussing FIG. 1 (as set forth on page 4, first paragraph) where there is depicted and discussed a single electron injecting layer 12A.

Support for amending the claims to recite a viewer side and for "wherein the light absorbing layer is positioned farther from the viewer side than the luminescent region" is found for example in the following portions of the specification: FIGS. 1-4 and the text discussing the figures as set forth on page 4. The viewer side in the figures is that facing layer 4A (FIG. 1), layer 6B (FIG. 2), layer 4C (FIG. 3), and layer 10D (FIG. 4) as implied by the arrow for the light emitted by the device. Ambient light can enter the device on the viewer side in the direction opposite to the arrow.

Support for amending the claims to recite "the light absorbing layer overlays the charge injecting layer to absorb ambient light that passes through the charge injecting layer" (charge injecting layer is replaced by electron injecting layer in claim 7 and by hole injecting layer in claim 16) is found for example in FIGS. 1-4 and the paragraph bridging pages 4 and 5.

Reconsideration of the application as amended is respectfully requested.

Regarding the listing of references in the specification as discussed by the Examiner in section 1 of the Office Action, applicants respond that a number of Information Disclosure Statements (each with a Form PTO-1449) has already been filed and acknowledged by the Examiner. In addition, applicants are concurrently filing a supplemental Information Disclosure Statement (with a Form PTO-1449).

The Examiner rejects claims 5, 6, 14, and 15 under 35 USC 112, second paragraph, for the reason recited in the Office Action. This rejection is respectfully traversed. MPEP 2173.05(b)A states: "the court held that claims reciting 'at least about' were invalid for definiteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term 'about.'" In the context of the extent of light extinction, however, the phrase "at least about" as used in the present claims has a clear meaning of a range from a flexible lower limit (some flexibility in the lower limit is provided by "about") up to an upper limit of 100% (since it is possible in embodiments that all the light entering the light absorbing layer may be absorbed). Applicants direct the Examiner's attention to the paragraph bridging pages 9-10 which supports applicants' contention that the phrase "at least about" has a clear meaning in the context of the extent of light extinction.

The Examiner rejects claims 1-8 and 10-15 under 35 USC 102(e) as being anticipated by Hung et al., US Patent 6,429,451. This rejection is respectfully traversed. The Examiner contends that the device depicted in Fig. 2 of Hung anticipates independent claims 1 and 7. The Examiner, however, is incorrect in asserting that layer 220 is a charge injecting layer/electron injecting layer; in fact, layer 220 is an electron transport layer which is considered by those skilled in the art to be different from a charge injecting layer/electron injecting layer. In addition, with regards to Hung's device of Fig. 2, those skilled in the art would consider the luminescent region to be the combination of the electron transport layer 220, light emitting junction 215, and hole transport layer 210. Those skilled in the art would not consider the light emitting junction 215 by itself to be the luminescent region because junction 215 is the place where contact occurs between the electron transport layer 220 and hole transport layer 210. In view of the above clarification, it is

clear that the presently claimed charge injecting layer (claim 1)/electron injecting layer (claim 7) is absent from the device depicted in Fig. 2 of Hung.

The device depicted in Fig. 3 of Hung includes a reflection layer 350 but includes a bilayer interfacial structure 370 which "provides for effective electron injection from the layer 350 into the organic electron-transporting layer 320" (column 6, lines 21-24). Thus, Fig. 3 of Hung, which discloses a bilayer electron injection structure, fails to anticipate applicants' claimed single charge injecting layer (claim 1)/electron injecting layer (claim 7).

Applicants disagree with the Examiner's position that the dependent claims are obvious, but need not at this time specifically address the Examiner's comments regarding these dependent claims since independent claims 1 and 7 are patentable over Hung and thus the dependent claims are also patentable over the reference.

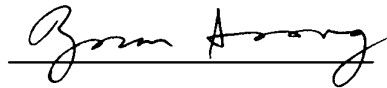
The Examiner rejects claim 9 under 35 USC 103(a) as being unpatentable over Hung et al., US Patent 6,429,451 and Bulovic et al., US Patent 5,834,893. This rejection is respectfully traversed. In view of the above discussion regarding Hung, the Examiner has failed to establish a prima facie case of obviousness for the combination of Hung and Bulovic.

The Examiner rejects claim 16 under 35 USC 103(a) as being unpatentable over Kobayashi, US Patent Appln. 2002/0033664 in view of Parthasarathy et al., US Patent 6,420,031. This rejection is respectfully traversed. In Kobayashi, in Fig. 4, the auxiliary anode 7 (which the Examiner contends is the electrically conductive light absorbing layer) is positioned closer to the viewer side (facing protective substrate 9) than the light-emitting layer 3. In contrast, claim 16 recites that the light absorbing layer is positioned farther from the viewer side than the luminescent region, which is the opposite of Kobayashi. Another difference is that in Kobayashi the auxiliary anode 7 fails to overlay the hole injection 4 (rather, the auxiliary anode 7 overlays the pixel partition 6) which means that ambient light can enter the device on the viewer side, pass through a number of layers including the hole injection layer, and be reflected back (by a reflective surface such as at the cathode 2) towards the viewer side, thereby degrading image contrast. In contrast, claim 16 recites that the light absorbing layer overlays the hole injecting layer to absorb ambient light that passes through the hole injecting layer. The secondary reference,

Parthasarathy, fails to remedy the deficiencies of Kobayashi and thus the combination of the two references fails to render obvious the presently claimed subject matter.

In view of the foregoing, the present application as amended is in condition for allowance. In the event the Examiner considers personal contact advantageous to the disposition of this case, he is hereby requested to call the undersigned attorney at (585) 423-4292, Rochester, NY.

Respectfully submitted,



Zosan S. Soong
Attorney for Applicant(s)
Registration No. 33,333
Telephone (585) 423-4292

7-21-03

ZSS/fsl
Xerox Corporation
Xerox Square 20A
Rochester, New York 14644

VERSION WITH MARKINGS TO SHOW CHANGES MADE:



IN THE CLAIMS:

1. (Amended) An organic light emitting device defining a viewer side and comprising:

- a first electrode;
- a second electrode; and

a luminescent region including an organic electroluminescent material between the first electrode and the second electrode, wherein one of the first electrode and the second electrode includes both a single substantially transparent charge injecting layer adjacent to the luminescent region and an electrically conductive light absorbing layer wherein the light absorbing layer is positioned farther from the viewer side than the luminescent region and the light absorbing layer overlays the charge injecting layer to absorb ambient light that passes through the charge injecting layer.

7. (Amended) An organic light emitting device defining a viewer side and comprising in sequence:

(a) a cathode including:

- (i) an electrically conductive light absorbing layer, and
- (ii) a single substantially transparent electron injecting layer;

(b) a luminescent region including an organic electroluminescent material; and

(c) an anode that is substantially transparent to light wherein the light absorbing layer is positioned farther from the viewer side than the luminescent region and the light absorbing layer overlays the electron injecting layer to absorb ambient light that passes through the electron injecting layer.

16. (Amended) An organic light emitting device defining a viewer side and comprising in sequence:

(a) a cathode that is substantially transparent to light;

(b) a luminescent region including an organic electroluminescent material; and

(c) an anode including:

- (i) a substantially transparent hole injecting layer, and

(ii) an electrically conductive light absorbing layer wherein the light absorbing layer is positioned farther from the viewer side than the luminescent region and the light absorbing layer overlays the hole injecting layer to absorb ambient light that passes through the hole injecting layer.